

REMARKS/ARGUMENTS

The present Amendment is in response to the Office Action having a mailing date of March 8, 2005. Claims 1-28 are pending in the present Application. Claims 15-28 have been withdrawn. Applicant has amended claims 1, 7, 8 and 9. Applicant has also canceled claim 6. Consequently, claims 1-5 and 7-28 remain pending in the present Application.

Applicant has amended claim 1 to recite that the first and/or the second write line is a magnetic write line including a magnetic material in a core portion of the magnetic write line. Support for the amendment can be found on page 8, lines 17-20. Applicant has also amended claim 1 to recite conductive plugs no portion which resides directly under a magnetic element. Support for the amendment can be found in Figures 4A and 5A. Applicant has amended claims 7-9 to depend upon pending claims and to harmonize the claims with claim 1. Applicant has also amended 9 to correct an error. Applicant has amended the specification to correct minor errors and to ensure that the terms used are standard. Applicant has provided new Figures 7-12. Figures 7-8 correspond to Figures 3A and 5A, respectively, but depict the free layer as being below the insulating layer. Figures 9-12 depict embodiments of the magnetic write line. Thus, Figures 7-12 depict features previously recited in the claims and described in the specification. Accordingly, Applicant respectfully submits that no new matter is added.

In the above-identified Office Action, the Examiner objected to the specification because of informalities and a non-standard technical term. Applicant has amended the specification to correct the informalities and the use of the technical term to render the technical term standard. Accordingly, Applicant respectfully submits that the Examiner's objection to the specification has been addressed.

In the above-identified Office Action, the Examiner also objected to the drawings as not showing features depicted in claims 3, 6, 7, 8, and 9. Applicant has provided Figures 7-12, which depict the features of claims 3 and 6-9. Accordingly, Applicant respectfully submits that the Examiner's objection to the drawings has been addressed.

In the above-identified Office Action, the Examiner rejected claims 6 and 9 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant respectfully traverses the Examiner's rejection. Claim 6 has been canceled. Claim 1 has been amended to incorporate the limitations of claim 6, but does not utilize the phrase to which the Examiner objected. Applicant has amended claim 9 to positively recite the insulator and magnetic cladding. Consequently, Applicant respectfully submits that the elements of claim 9 have proper antecedent basis. Accordingly, Applicant respectfully submits that the claims herein are clear and definite.

In the above-identified Office Action, the Examiner also rejected claims 1 and 2 under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,788,605 (Sharma) or U.S. Patent Application Publication 2004/0191928 A1 (Shi). The Examiner rejected claims 3 and 14 under 35 U.S.C. § 102 as being anticipated by Shi. The Examiner also rejected claims 4-5 under 35 U.S.C. § 102 as being anticipated by Sharma. The Examiner also rejected claims 10-13 under 35 U.S.C. § 102 as being anticipated by Sharma or Shi. The Examiner further rejected claims 6-9 under 35 U.S.C. § 103 as being unpatentable over Sharma in view of U.S. Patent No. 6,211,090 (Durlam).

In the above-identified Office Action, the Examiner also rejected claims 1 and 2 under 35 U.S.C. § 102 as being anticipated by Sharma or Shi.

Applicant respectfully traverses the Examiner's rejection. Independent claim 1 recites a magnetic memory containing a plurality of magnetic elements, each of the plurality of magnetic elements having a top and a bottom, at least first and second write lines, and conductive plugs. Further, claim 1 recites that the at least one first and/or the second write line is "a magnetic write line including a magnetic material in a core portion of the magnetic write line." Claim 1 also recites that the conductive plugs are configured such that no portion of the plurality of conductive plugs resides directly below the plurality of magnetic elements. Because of the structure of the magnetic memory, including the magnetic write line and the lack of conductive plugs below the magnetic elements and, therefore, first write line, the magnetic memory has improved performance as well as simpler fabrication, greater process control, and improved design and process flexibility. Specification, page 21, lines 5-9.

Sharma fails to teach or suggest the magnetic memory recited in claim 1. In particular, Sharma fails to teach or suggest that the first or second write line is a magnetic write line including a magnetic material in the core of the magnetic write line. The cited portions of Sharma describe a magnetic memory including MTJ stacks that are written using lines MBL and MWL. Although MBL apparently resides below the MTJ, Applicant can find no indication in Sharma that MBL and MWL include a magnetic material at their core. Sharma details other items which are ferromagnetic, such as the free layer 322 and pinned layer 326 of the MTJ 320 depicted in Figure 3. However, the cited portions of Sharma are devoid of mention of magnetic material being located in any portion of the lines MBL and MWL. Instead, the lines MBL and MWL are apparently merely nonmagnetic conductive lines. Consequently, Sharma fails to teach or suggest the use of write line(s) including a magnetic material at the core. Sharma, therefore, fails to teach or suggest the magnetic memory recited in claim 1.

Shi also fails to teach or suggest the magnetic memory recited in claim 1. The cited portion of Shi describes a magnetic memory in which the bit line resides below the magnetic element. Although Shi functions well for its intended purpose, a portion of the stud 107 depicted in Figure 4 reside below the bit line 1104 and the magnetic element 11. Thus, there may be significant topology below the bit line 1104 and the magnetic element 11. This is in contrast to the magnetic memory recited in claim 1 in which the conductive plugs are configured such that no portion of the plurality of conductive plugs resides directly below the plurality of magnetic elements. Consequently, Shi also fails to teach or suggest the magnetic memory recited in claim 1. Accordingly, Applicant respectfully submits that claim 1 is allowable over the cited references.

Claim 2 depends upon independent claim 1. Consequently, the arguments herein apply with full force to claim 2. Accordingly, Applicant respectfully submits that claim 2 is allowable over the cited references.

The Examiner rejected claims 3 and 14 under 35 U.S.C. § 102 as being anticipated by Shi.

Applicant respectfully traverses the Examiner's rejection. Claims 3 and 14 depend upon independent claim 1. Consequently, the arguments herein apply with full force to claims 3 and 14. Accordingly, Applicant respectfully submits that claims 3 and 14 are allowable over the cited references.

The Examiner also rejected claims 4-5 under 35 U.S.C. § 102 as being anticipated by Sharma.

Applicant respectfully traverses the Examiner's rejection. Claims 4-5 depend upon independent claim 1. Consequently, the arguments herein apply with full force to claims 4-5. Accordingly, Applicant respectfully submits that claims 4-5 are allowable over the cited references.

The Examiner also rejected claims 10-13 under 35 U.S.C. § 102 as being anticipated by Sharma or Shi.

Applicant respectfully traverses the Examiner's rejection. Claims 10-13 depend upon independent claim 1. Consequently, the arguments herein apply with full force to claims 10-13. Accordingly, Applicant respectfully submits that claims 10-13 are allowable over the cited references.

The Examiner further rejected claims 6-9 under 35 U.S.C. § 103 as being unpatentable over Sharma in view of Durlam. In so doing, the Examiner relied upon Durlam as teaching a magnetic memory device having a soft magnetic cladding layer on the bit line.

Applicant respectfully traverses the Examiner's rejection. Claims 6-9 depend upon independent claim 1. Consequently, the arguments herein with respect to Sharma apply with full force to claims 6-9. In particular, Sharma fails to teach or suggest a magnetic memory in which the first and/or second write line(s) are magnetic write lines that include a magnetic material in the core portion.

Durlam fails to remedy the defects of Sharma. The cited portion of Durlam fails to describe the use of a magnetic material at the core of the magnetic write line. Consequently, any combination of Sharma and Durlam would also fail to teach or suggest this feature. Sharma in view of Durlam thus fails to teach or suggest the magnetic memories recited in claims 6-9. Accordingly, Applicant respectfully submits that claims 6-9 are allowable over the cited references.

Applicant's attorney believes that this application is in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicant's attorney at the telephone number indicated below.

Respectfully submitted,

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Date

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